

**The Knowledge Bank at The Ohio State University**  
**Ohio State Engineer**

**Title:** The Engineering Experiment Station : The Latest Step in the Quadrangle Development

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**Issue Date:** Nov-1925

**Publisher:** Ohio State University, College of Engineering

**Citation:** Ohio State Engineer, vol. 9, no. 1 (November, 1925), 9-10.

**URI:** <http://hdl.handle.net/1811/33730>

**Appears in Collections:** [Ohio State Engineer: Volume 9, no. 1 \(November, 1925\)](#)

# THE ENGINEERING EXPERIMENT STATION

*The Latest Step in The Quadrangle Development*

By E. M. HITCHCOCK, '28

THE history of experiment stations at the Ohio State University goes back to the year 1882, when the Ohio General Assembly passed an act providing for an agricultural station to be operated in conjunction with the University, then known as the Ohio Agricultural and Mechanical College. The station was later moved to Wooster where it remains.

Soon the engineering and industrial interests of the country began to see the value of such stations to agriculture and felt that something must be done for the engineering interests. The first engineering experiment station was established at the University of Illinois and since then many capable and valuable reports have been issued.

Of the forty-eight Land Grant Colleges, twenty-eight have established engineering experiment stations and some of the remainder carry on engineering research.

## HISTORY OF STATION AT OHIO STATE UNIVERSITY

In February, 1911, Dean Edward Orton, Jr., of Ohio State University, appointed a committee with Professor N. W. Lord as chairman to "consider the desirability of establishing an Engineering Experiment Station in connection with Ohio State University and to report to the engineering faculty their conclusions and recommendations concerning the same."

In Dean Orton's annual report of the same year to President Thompson, he says:

"In our opinion the duty of a State University to the people who support it is not confined to the training of the youth of the State. It involves two other duties—the duty to bring new knowledge into the world by original scientific researches and to show the people of the State how to use and apply the knowledge in our possession. This conception of the function of a State University is based upon the principle of economy and efficiency in the administration of public business. Beyond question, every commonwealth needs a place where its rising generation can secure technical, industrial and



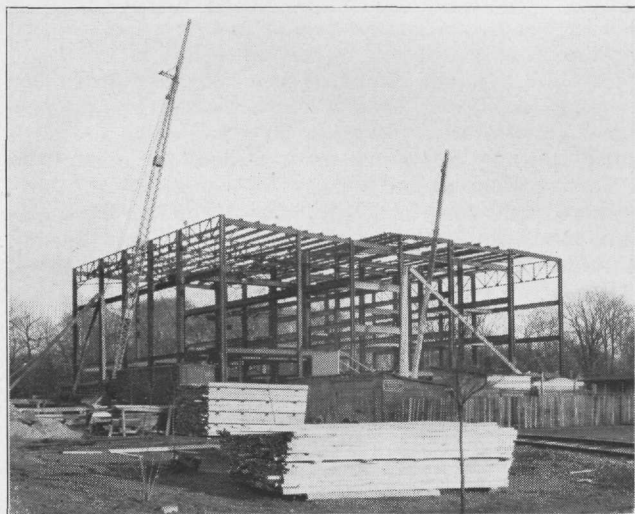
The Completed Unit

professional education. Beyond question, every commonwealth needs expert advice in making expert use of its resources and in choosing the industries it is best fitted by nature to support. The men who can teach efficiently in such schools must in the nature of the case be able to serve in the other capacity also. The use of their powers as technical advisers to the public and to provide interests is the most effective mode of improving their value as teachers. The two functions supplement each other. In Ohio the State has made some use of the expert knowledge of its University corps, but not nearly as much as in some other states, nor as much as it is desirable."

As a result the 80th General Assembly of Ohio in 1913 passed a bill authorizing the Board of Trustees of Ohio State University to establish an organization to be known as the Engineering Experiment Station of the Ohio State University and to be operated in connection with the College of Engineering. The purpose of the station was to "make technical investigations and to supply engineering data which will help to increase the economy, efficiency and safety of the manufacturing enterprises of the state and to promote the conservation and utilization of its resources."

As no funds were appropriated by the Legislature the Station was not fully organized until 1915, when Dr. Thompson appointed an acting director and six members from the Engineering College faculty to act as advisory council. For each of the years 1915 and 1916, \$1,000 was appropriated and was used among the departments carrying on research. Sixteen Engineering College bulletins had already been published previous to this time. The Legislature appropriated \$20,000 for use in the years 1919 and 1920 and this has been the biennial appropriation ever since that time.

Up to the present time the Engineering Experiment Station is really the Engineering College with its facilities in the way of laboratories and equipment and this will always be so. In work of this kind there is always need of separate space where work can be carried on



The Steel Work

with no danger of interference with the regular University work.

In 1923, plans for the present building and organization took form, and the Board of Trustees set aside an appropriation for the construction of an Engineering Experiment Station building and this is the first building of its kind devoted entirely to general engineering experiment station work connected with any university in the country.

#### DESCRIPTION

The foundations of the building are made of concrete carried down to a proper depth. To this foundation or footing the steel columns are bolted. There are twenty steel columns in the outside walls and fifty-five for supporting the roof and interior structure. There are many steel girders and I beams for the purpose of tying together the verticals and supporting the several floors. This is the first steel structural building to be erected on the campus.

The building is faced with red brick which rests on a water table of cut stone. Between the third and fourth floors is a belt course of cut stone and the brick work of the building is topped with a cut stone cornice. All window frames are of steel and floors of reinforced concrete, so that the building is a fireproof structure with the exception of the roof, which is of a slow burning construction.

This building has overall dimensions of 103 feet by 134 feet, and with its four stories gives a total floor space of approximately 40,000 square feet.

#### CONSTRUCTION METHODS

A large stiff legged structural steel crane, sometimes called a jib crane, was used for setting all the steel work and lifting the different members into place. Even the large traveling crane which has a lifting capacity of ten tons and spans the large testing room, was lifted into place by this crane. After all the steel was set and riveted, this jib crane was taken down in order to make room for further construction work.

The system of scaffolding was an interesting feature, for instead of building the scaffold from the ground up it was suspended from the roof and completely encircled the building. Such a system is a great time saver. This is the first time that a suspended scaffold system has been used on the campus.

The concrete for the different floors was handled in a large bucket which was lifted from the mixer by a derrick standing just west of the building. This derrick also handled brick and stone for the work on the outside of the building while an elevator erected in the main testing room handled some of the material for the interior work.

The forms used in the construction of the concrete floors and which must support the concrete until it sets, were held in place by adjustable jacks which rested on the floor below. These jacks were left in place until the concrete had completely set when they were removed and the forms with them.

#### EQUIPMENT

Worthy of note is the 1,000,000 pound compression and tension machine, whose strength is sufficient to pull apart a soft steel bar 8" x 2" thick. There is also a 400,000 pound tension, compression, and shear machine and a 500,000 pound machine for testing 25 foot columns. The foundations of these large machines were placed in pits in order to permit a large traveling crane to pass over the testing machine.

Space is allotted in the new building for the civil engineering department's concrete laboratory. The State Highway Department will move from the basement

of Brown Hall into new laboratories on the second floor of the station. Much of the third floor will be devoted to chemical engineering research and to the gas testing equipment now located in the basement of Lord Hall. Incidentally, the large vertical gas retort now standing in the rear of Lord Hall will be moved to a location just west of the station. A station of the United States Geologic Survey, the department of electrical engineering, the department of forestry, and the department of metallurgy are to receive rooms in the building.

The building as it now appears is not the thing of beauty that it will become when completed, for it must be remembered that the present structure is only about one-fourth the size of the completed station.